Small Business Innovation Research

An Alternative Method of Producing Rhenium Combustion Chambers

Rhenium Alloys, Inc.
Elyria, OH

INNOVATION

Manufacturing of large diameter high-density rhenium tubes

ACCOMPLISHMENTS

- Obtaining a sintered density of greater than 95% of theoretical, and HIPed large rhenium tube shells without a canning step to densities greater than 98%
- Development of a manufacturing method with product improvement at lower cost
- Reduce time and cost in the production of large diameter high-density rhenium and rhenium alloy tubes

COMMERCIALIZATION

- Orders of $150-200K per year initially are expected for these tubes, which are precursors to thrusters
- This innovation will reduce the cost of bimetallic rings produced via explosive bonding as well as crucibles for the nuclear industry
- Rhenium Alloys has increased job equivalents by 1.0, which is directly associated with this SBIR
- Rhenium and rhenium alloy tube sales are expected to be substantial after completion of this Phase II SBIR, which includes a no cost extension for the production of near net shape components

Fabricated large HIPed rhenium tube shells with a density >98%

GOVERNMENT/SCIENCE APPLICATIONS

- NASA requires rhenium for many space applications such as solar thermal propulsion and liquid fueled thrusters for satellites
- Various DoD agencies require lower cost production methods for several rhenium applications such as tactical missile components and other high temperature or thermally cycled parts

1995 Phase II, NAS3-97036, 4/99
NASA Contact - James Biaglow
Company Contact - Mark Hamister